UNITED STATES PATENT AND TRADEMARK OFFICE

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09/609,392	07/03/2000	Hyeon Jun Kim	P-102	4315

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO 90C (Rev 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-37_ is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) _1-37_ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All b) ☐ Some * c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on March 08, 2004 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1.   Claims 1-37 rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure

which is not enabling. The <u>search Performance</u> on page 2 in specification lines 13-24 is

essential to the practice of the invention, but not included in the claim(s) is not enabled by

the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Applicant

does not specify explicitly the claim invention of how the large number of histogram bins is

reduced or achieved a reliable performance in every case.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1.   Claims 30, 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention.

The recitation of" the representative color value corresponds to color value in b) when N = 1" which is disclosed in claims 30 and 35, not clear what exactly Applicant is trying to claim? Examiner's interpretation: Applicant claims in an environment that contains only one color, and that color corresponds to represent color value. Question: What are other options that can be corresponding to representative value?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1-37 rejected under 35 U.S.C. 103(a) as being unpatentable over Graham et al. (herein after refers as a Graham), and further in view of Qian et al. (hereinafter refers as a Qian).

2.   Claim 1,

"A dominant color setting method which generating a region dominant color descriptor incorporating information indicating a number of dominant colors with respect to a region of interest in visual data, at least one expressed dominant color, a frequency with which the dominant color appears in the region, and an accuracy of a color value representing the region". [Examiner's comments: Visual element descriptor is considered to be color, spatial structure, shape and motion. Color composes of color space that is RGB, YCrCb, HSV (hue, saturation, value) and linear transformation matrix. Dominant color is to specify set of dominant color in a shape region, use color histogram and content based retrieval. Color histogram is the percent of each color.] Graham in abstract teaches that a system and method for finding areas of similar

color (ROI) in electronically captured spot color images and replacing the similar colors with a

single dominant color. Graham in col. 3, lines 66-67 discloses a pallet of dominant colors is

identified based on the histogram classification. The color pallet is used to identify the

dominant colors in the image. Graham in col. 4, lines 11-15 discloses the spatial areas are

finally compared with the pallet of colors and the average noted color of the spatial areas are

replaced with the closest corresponding pallet color. Graham does not explicitly specify

accuracy information. However Qian in col. 2, lines 7-21 teaches the coherence of the color of a

picture element in relation to that of other picture elements in a contiguous region is

determined. Even though the number of picture elements of each color is equal and, therefore,

the color histograms are identical for two images, differences between features in the images

will mean that the numbers of picture elements of each color, which are color coherent, will

vary. Color coherence vectors do embed some spatial information in the descriptors. Qian in

col. 4, lines 63-67 teaches the mean values of the individual red, green, and blue (RGB) pixels,

a transform of the RGB pixel values or the mean color or the vector sum of the RGB intensity

values might be used to describe the color of a test area of heterogeneous color. Thus, it would

have been obvious to one of ordinary skill in the art at the time the invention was made to

incorporate the teaching of Qian into Graham in order to to be invariant to certain types of

transformations of the image, conserve computational and storage resources, be insensitive to

noise, and be easy to interpret in a normal sense.

3.   Regarding Claims 2 and 10, Graham in col. 3, line 1 indicates the number of different

color may actually be 8000 to choose from. And also see rejection of claim 1. The step of this

claim the first dominant color descriptor and the second dominant color descriptor is obvious

because applicant does not specify set of DC in a shape region, and the first dominant color

descriptor could be a background color, and the second DC could be a shape region.

4.   Claims 3 and 11

An expression of accuracy of the dominant colors as extracted by a certain method is obtained

in accordance with a degree of confidence of the region dominant color descriptor. Graham in

col. 5 lines 57-64 discloses the dominant colors are accomplished by creating "clusters" of

colors that are related. This is done by taking the maximum occurrence and finding the colors

around that maximum occurrence that are related and including the related colors in the color

cluster. See rejection of claim 1.

5.   Claim 4,

Graham in figs. 10 and 11 illustrates the broad claim language in claim 4. And also Graham in

col. 4 lines 9-15 discloses Segments of each line are correlated with each other and with

segments of adjacent lines to determine if the noted colors are in similar locations to thereby

identify various spatial areas of color representing the original. The spatial areas are finally

compared with the pallet of colors and the average noted color of the spatial areas is replaced

with the closest corresponding pallet color.

6.   Claim 5,

Graham in fig. 10 steps 1004-1016 illustrates matching the current color to the pallet color and

resolved areas vertically and horizontally.

7.   Claim 6.

A coherency value is used to represent the concentration degree of the pixels of a color with

respect to the dominant color is adapted to the confidence. Graham in col. 4, lines 5-7 discloses

the locations of the different colors are noted (e.g., stored in memory), using a break out box

comprising a set of rules to evaluate each pixel.

8.   Claims 7 and 8,

The step of claims 7 and 8 are obvious because Graham in figs. 14-15 illustrates an example of a

horizontal and vertical skew correction.

9.   Claim 9,Graham does not explicitly specify accuracy information includes to a

confidence measure expressed by a vector value based on coherence value. However Qian in col.

2, lines 7-21 teaches the coherence of the color of a picture element in relation to that of other

picture elements in a contiguous region is determined. Even though the number of picture

elements of each color is equal and, therefore, the color histograms are identical for two images,

differences between features in the images will mean that the numbers of picture elements of

each color, which are color coherent, will vary. Color coherence vectors do embed some spatial

information in the descriptors. Qian in col. 4, lines 63-67 teaches the mean values of the

individual red, green, and blue (RGB) pixels, a transform of the RGB pixel values or the mean

color or the vector sum of the RGB intensity values might be used to describe the color of a test

area of heterogeneous color. Thus, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to incorporate the teaching of Qian into Graham in order to to

be invariant to certain types of transformations of the image, conserve computational and storage

resources, be insensitive to noise, and be easy to interpret in a normal sense.

10.   Claims 10, 11 and 12

Applicant does not specify explicitly the claim invention. Applicant repeats the same

procedures in claims. See rejection of claim 1.

11.   Claims 13-21,

Applicant does not specify the claim invention, because the concept of the invention is to set up a

method for video region dominant color of a ROI in a video during a multimedia indexing

operation. And also the present invention supposed to claim advantages over the problems

presented on page 2 lines 15-18. Applicant on page 2, lines 19-24 discloses that the advantages

of the present invention over the previous art is to improve the search performance of the proper

color. Examiner does not able to extract the above arguments from the claim invention.

Examiner's comment: Color Quantization is the term used to describe the process of reducing the

number of colors in a image by selecting an optimized set of representative colors and then re-

applying this reduced set to the original image.

12.   Claim 22, Graham in col. 4, lines 66-68 teaches the number of lines is referred to as the

height. The width and the height in pixels (or the number of pixels horizontally and the number

of lines) describe the dimensions of the image in pixels.

13.   Regarding Claim 23, a video region dominant color setting method is recited to include

the extracting of a region, setting a dominant color descriptor with respect to a certain region,

storing a region descriptor with respect to the region dominant color descriptor and a set

dominant color to represent that extracted region. Graham in col. 4, lines 66-68 teaches the

number of lines is referred to as the height. The width and the height in pixels (or the number of

pixels horizontally and the number of lines) describe the dimensions of the image in pixels.

Graham in fig.1 illustrates a data storage item 124. See rejection of claim 13.

14.   Claim 24 contains features that are substantially similar to those stated in Claim 23 with exception to the "comparing all stored other region descriptors with a dominant color." Graham in the abstract discloses this limitation.

15.   The limitation as recited in Claim 25 that is not present in Claim 24 is the method of transforming and searching a sharing data format using a region descriptor of each system. However this additional featured imitation of transforming and searching is described in the abstract of Graham Segments of each line are correlated with each other and with segments of adjacent lines to determine if the noted colors are in similar locations to thereby identify various spatial areas of color representing the original. The spatial areas are finally compared with the pallet of colors and the average noted colors of the spatial areas are replaced with the closest corresponding pallet color.

16.   Claim 26 recites the use of the frequency that the dominant color appears in the region and the use of a confidence measure of the color of the region to describe the amount of reliability should be given to the dominant colors in the given region. Since the recitation of the term "reliability" in this Claim is applied in substantially the same way the term "accuracy" is recited and applied in Claim 1, both terms are deemed synonymous with each other. Also, the use oh, and applicability of, the limitation: "frequency that the dominant color appears" is also substantially the same limitation as addressed with respect to Claim 1 above, and therefore tile same remarks apply.

17.   Claim 27, A method for describing dominant color of visual data, comprising: selecting a region of interest from a media object; and generating a dominant color descriptor for the region, said descriptor including": a) information indicative of a number of colors (N) selected for

extraction from the region, where N _> 1"; b) information indicative of color values determined for respective ones of the N colors; c) information indicative of frequencies with which respective ones of the N colors appear in the region; d) information indicative of an accuracy of a representative color value for the region, said representative color value determined based on the information in at least one of b) and c).See rejection of claim 1.

18.   Claim 28, The method of claim 27, wherein the color values in b) are determined based on any one of the following extraction methods: an average-color method; a method of expressing only one most frequency appearing color in the region; a method of expressing more than one most frequently appearing color in the region; a method of determining which colors appear in the region more than a predetermined percentage of a threshold value; and a histogram method". Graham in col. 3, lines 53068 discloses that the dimensions of the histogram may comprise other known image coordinate systems. A pallet of dominant colors is identified based on the histogram classification. The color pallet is used to identify the dominant colors in the image.

19.   Claim 29, The method of claim 27, wherein the information in c) is determined based on pixel counts for respective ones of the N colors". Graham in abstract teaches this limitation.

20.   Claim 30, see rejection of claim 1.

21.   Claim 31, The method of claim 27, wherein the color values in b) are defined by at least one of color space information, Quantization information, color clustering information, and channel information. Graham in col. 5, lines 57-64 teaches the limitation.

22.   Claim 32, see rejection of claim 12.

23.   Claim 33, A method for describing dominant color in visual data, comprising: selecting

a region of interest from a media object; and generating a dominant color descriptor for the

region, said descriptor including": a) information indicative of at least one color selected for the

region, b) information indicative of accuracy of a color value assigned to the region, said color

value based on the information in (a). See rejection of claim 27.

24.   Claim 34, It is obvious because, "A computer-readable medium for setting color

information for visual data, having stored thereon": a) information indicative of a number of

colors (N) selected for extraction from a region of a media object, where $N \geq 1$; b) information

indicative of color values determined for respective ones of the N colors; c) information

indicative of frequencies with which respective ones of the N colors appear in the region"; d)

information indicative of an accuracy of a representative color value for the region, said

representative color value determined based on the information in at least one of b) and c). See

rejection of claim 27.

25.   Claim 35, see rejection of claim 1.

26.   Claim 36, "The medium of claim 34, wherein the color values in b) are defined by at

least one of color space information, quantization information, color clustering information, and

channel information". Graham in col. 5, lines 57-64 teaches the limitation.

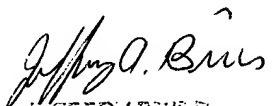27.   Claim 37, see rejection of claim 22.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Javid A Amini whose telephone number is 703-605-4248. The examiner can normally be reached on 8-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 703-305-4713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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